

**1 A. TITLE OF THE INVENTION**

## **2 SNACK FOODS COMPRISING EMULSIFIED LIQUID SHORTENING COMPOSITIONS**

# COMPRISING DIETARY FIBER GEL, WATER AND LIPID.

#### 4 B. CROSS-REFERENCE TO RELATED APPLICATIONS

5 Not Applicable

**6 C. STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH/DEVELOPMENT**

7 The present invention does not involve any form of federally sponsored research or  
8 development.

9 D. BACKGROUND OF THE INVENTION

10 The present invention relates to snack foods comprising emulsified liquid shortening  
11 compositions comprising dietary fiber gel, water and lipid. Recent media attention to the global  
12 problem of obesity demonstrates a need for greater availability of foods with low caloric and fat  
13 content. This is especially true for foods that typically have high fat and caloric content, such as  
14 snack foods.

15 Snack foods typically comprise some fat. Other ingredients can vary according to the type of  
16 snack food and the recipe followed, but typically, snack foods are high in both fat and caloric  
17 content. Snack foods can be divided into two broad classes: salty snack foods, such as chips and  
18 crackers, and sweet snack foods, such as candies and snack bars, for example granola bars and  
19 nutrition bars

20 In recent years, some companies have begun to offer reduced fat snack foods. This variety of  
21 snack food, however, often fails to retain the desirable taste and texture of snack foods comprising  
22 higher fat contents.

23 The absence of a means to reduce the fat and caloric content of snack foods while still  
24 producing a desirably flavored and textured snack food presents an unmet need in today's food  
25 industry.

26 E. BRIEF SUMMARY OF THE INVENTION

27 It is an object of the present invention to provide a unique composition of matter embodied  
28 by low-calorie and low-fat snack foods. This reduction in caloric and fat content answers an unmet  
29 need in the food industry to provide the consuming public with a healthier, higher fiber alternative to  
30 traditional types of snack foods that typically are inherently fattening. It is another object of the  
31 present invention to provide snack foods that have been fortified with insoluble fiber and other  
32 functional foods.

33 Dietary fiber gels for calorie reduced foods hold the key to meeting this need. Dietary fiber  
34 gels for calorie reduced foods are fully described in U.S. Patent number 5,766,662 (the '662 patent).  
35 These dietary fiber gels comprise insoluble dietary fibers consisting of morphologically disintegrated  
36 cellular structures, and are characterized by their ability to retain large amounts of water.  
37 Additionally, these dietary fiber gels are characterized by their high viscosity at low solid levels.  
38 Other insoluble fibers derived from cereals, grains and legumes consist of morphologically intact  
39 cellular structures, and thus impart a gritty texture to the foods in which they are contained. The  
40 dietary fiber gels disclosed in the '662 patent, however, consist of morphologically disintegrated  
41 cellular structures and thus impart a smoother texture than other insoluble fiber formulations.

42 More specifically, the present invention utilizes emulsified mixtures of the dietary fiber gels  
43 disclosed in the '662 patent, the emulsified mixtures further comprising, at a minimum, water and  
44 lipid. These emulsified mixtures are fully described in and are the subject of United States patent  
45 application number 10/669731 filed 09/24/2003. These emulsified mixtures, or "emulsified liquid  
46 shortening compositions comprising dietary fiber gel, water and lipid", can further comprise  
47 functional foods such as high omega three and omega six oils and pure omega three and omega six  
48 fatty acids, medium chain triglyceride, beta carotene, calcium estearate, vitamin E, bioflavonoids,  
49 fagopyritrol, polyphenolic antioxidants of vegetable origin, lycopene, luteine and soluble fiber, for  
50 example Beta-Glucan derived from yeast, and other soluble fibers derived from grain, flax seed, and

51 other vegetable and fruit fiber sources, and any combination thereof. Hence, in addition to reducing  
52 fat and caloric content of snack foods, further health benefits can be achieved by replacing a portion  
53 of fat with emulsified liquid shortening compositions comprising dietary fiber gel, water and lipid.

54 According to the present invention, fat and caloric content can be reduced by the replacement  
55 of the fat normally found in snack foods with emulsified liquid shortening compositions comprising  
56 dietary fiber gel, water and lipid. This replacement of fat does not adversely affect either the taste or  
57 texture of the snack foods. The result is that fat and caloric content of snack foods can be  
58 manipulated with minimal effect on taste and texture, and as stated above, additional health benefits  
59 can be achieved through consumption of snack foods comprising emulsified liquid shortening  
60 compositions comprising dietary fiber gel, water and lipid when functional foods are included in the  
61 formulations.

62 Further objects, advantages and features of the present invention will present themselves in  
63 the following detailed description.

64 **F. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

65 This invention is directed to snack foods comprising emulsified liquid shortening  
66 compositions comprising dietary fiber gel, water and lipid. According to the present invention, fat  
67 and caloric content can be reduced by the replacement of the fat normally found in snack foods with  
68 emulsified liquid shortening compositions comprising dietary fiber gel, water and lipid (hereinafter  
69 “emulsified liquid shortening”). This replacement of fat does not adversely affect either the taste or  
70 texture of the snack foods. The result is that fat and caloric content of snack foods can be  
71 manipulated with minimal effect on taste and texture.

72 Salty snack foods, for example crackers and chips, can be formulated such that the snack  
73 food comprises 0.1 percent to 5.0 percent dietary fiber gel solids by replacing an appropriate amount,  
74 that is, an amount prorated to deliver this range of dietary fiber gel solids, of fat, including oil and  
75 liquid shortening, with an essentially identical amount of emulsified liquid shortening. Sweet snack

76 foods, for example candies and nutrition bars, can be formulated such that the snack food comprises  
77 0.1 percent to 5.0 percent dietary fiber gel solids by replacing an appropriate amount, that is, an  
78 amount prorated to deliver this range of dietary fiber gel solids, of fat, including oil and liquid  
79 shortening, with an essentially identical amount of emulsified liquid shortening.

80 The result is that fat and caloric content of snack foods can be manipulated with minimal  
81 effect on taste and texture, and as stated above, additional health benefits can be achieved through  
82 consumption of snack foods comprising emulsified liquid shortening compositions comprising  
83 dietary fiber gel, water and lipid when functional foods are included in the formulations.